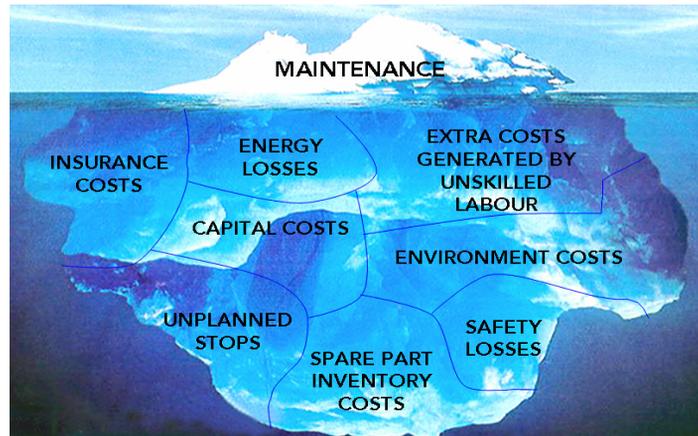


# Maintenance – a profit generator!

For any company that is dependent on machinery for manufacturing or distributing products the concept of maintenance is, or should be, a given. Aaron Blutstein spoke to Stan Jackson at SPM Instrument about the necessity of investing in maintenance during these volatile times.

Investment in maintenance is one area industry should be concentrating their efforts towards, getting back to basics and moving from reactive to proactive strategies. Failure to maintain critical items of manufacturing plant leads to breakdowns, causing downtime on the whole process, loss of productivity and a serious blow to profitability, not to mention the health and safety implications of failing to carry out routine maintenance.



It's well established that proactive maintenance is much less expensive than reactive maintenance. But for many companies, moving from a reactive to a proactive mode is one of the most difficult transitions. Historically, in rough times, the knee-jerk reaction has been to opt for short-term cost savings. This includes curtailing maintenance spending, ditching predictive activities and reverting to day-to-day fail-and-fix practices. In the end, short-term savings sacrifice longer-term gains.

Such spending decisions are shortsighted and less strategic because they are often made in response to emergency situations. Often, what keeps companies trapped in a continuous cycle of reactive maintenance is a lack of data that shows the true costs of this approach.

SPM Instrument managing director Stan Jackson says, "engineers know only too well the benefits of quality maintenance, but it can be difficult to convince others". He explains: "The financial directors need and rightly so, the relevant information on the impact of payback and on Return on Investment. This is especially true of the latter, so as to help the company to get investment from

the city. We have to be better equipped to understand this otherwise you can forget getting the finance required for your investments. If you are not one of those in the company who are more switched on to this the way of thinking, then you will get pushed to the back of the queue when applying for cash." So sometimes we all need to take a steady step back to look at how we can make things more efficient in order to move forward and to cope with difficult times. However making things more efficient can be achieved through many means, the most important of which is investment, and not just by cost cutting.

### How do we get that investment then?

Jackson gives some examples as to how to convince others of the need to invest. The first example shows the poor performance of Company A, and how this affects the profitability, productivity and the ROI (Return on Investment).

In figure 1 it can be clearly seen that Company A is only performing with an OEE (Overall Equipment Effectiveness) of 49.58%. This is due to poor Machine Availability 70.1%, Speed Performance 73.6% and Quality Performance 96.1%.

OEE = Availability x Speed x Quality:

$$70.1\% \times 73.6\% \times 96.1\% = 49.58\%$$

The impact of this means that instead of producing the maximum output of the plant, i.e. 156,000 units, they only produce 77,347, generate a reduction in profitability to 2,824,332, increase costs and the effect on Rate of Return is that they will only ever achieve 2.7%.

Overall plant improvement by investing in modern maintenance

Figure 2 shows how targeted investment in maintenance and condition monitoring (2,000,000 to 3,000,000) can dramatically improve overall performance. This can be achieved by identifying and analyzing just where the main plant stoppers and bottlenecks exist, find and correct root causes of

problems, determine design out issues, and planning the maintenance requirement instead of planned maintenance.

Jackson illustrates through the iceberg analogy that some senior management only ever see the tip being the 'Maintenance Cost' but below is the real impact of maintenance, reduced energy usage, lessen the environmental impact, reduced spare part usage and as such stockholding value freeing up cash, reduced capital investment as you can therefore extend the Life Cycle of the plant and machinery, reduce use of contract/ service labour and of course maximize up time thereby reducing unplanned stoppages.

Consider the achieved improvement figure shown in figure 2:

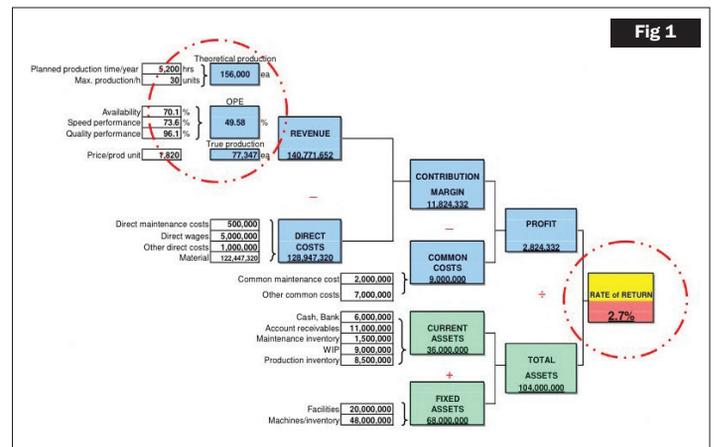
OEE = Availability x Speed x Quality:

$$95\% \times 95\% \times 98\% = 88.45\%$$

Profitability of the plant now stands at 16,187,538, numbers of units 137,974 with a Rate of Return of 15.6% and reducing costs by focusing on reliability.

### Classic case of how NOT to manage maintenance

Jackson firmly argues that even though Britain is facing challenging

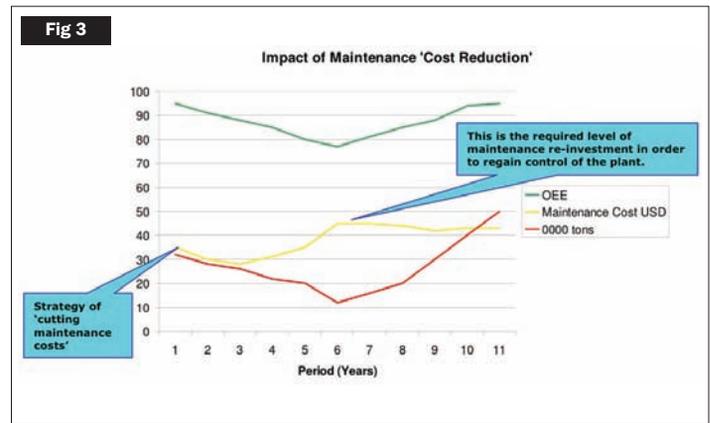


times, it is absolutely essential that industry consider the very important role of the maintenance department and the impact of considered maintenance strategies and investments in order to ensure that companies survive. He stresses: "It is up to you as maintenance managers and engineers to get that message across!"

So how do you do it? The detailed graph 'Impact of Maintenance Cost Reduction' (Fig 3) shows how to get things wrong. Jackson explains this is an actual study of a large paper mill that took the stance of reducing 'maintenance costs'. As it can be seen, from day one of the cost cutting exercise the immediate impact was negative in that the OEE and output of the plant went down significantly. It took two years for the plant management to understand and realise that it was the effect and impact of their maintenance cost cutting exercise that had led to this dramatic

should be geared to the plant requirement. Maintenance strategies should always focus on the operational requirement of the facility, and therefore drive down costs and to eliminate non-productive and unnecessary inspections. Maintenance should be planned and carried out on condition not a calendar.

"The thought that the plant is performing well however should never mean that you can reduce the maintenance activity level ad hoc. It is performing well for exactly that reason; that the maintenance strategy has been designed and is flexible. Do not be confused by thinking a once a quarter inspection that has been undertaken by a service provider, is any alternative to a dedicated maintenance system integrated into the company's strategy. It is not. You need staff to embrace these technologies, maintain ownership, be able to respond to



that Company B, because it focuses on reliability, transforms the OEE and performance.

Jackson passionately comments: "For years Britain has gone through the pain barrier, modernising, investing, re-quiping, training, offering the best facilities for investment in modern technological systems to use the skills that we have created.

"We have lean industry, key skills, and good attitudes; this is why the foreign investment has been attracted here. Companies are working harder and smarter than ever before, with output increasing by 50% in some instances with the same resources. UK industry has invested billions of Pounds in machinery and staff but we are not using this investment to its potential, and therefore losing billions of Pounds every year because it is not visible to accountants!

"We know to some cost in Britain, that skilled employees are difficult to get your hands on, and even more difficult to keep. They do not grow on trees. The more enlightened of us have been saying for years that industry must invest more in skilled apprenticeships, technicians, systems, strategies etc. The Government has finally acknowledged this by investing in modern apprenticeships, but this takes time, time that is a commodity that we do not have a great deal of. Therefore the one area that we can get rapid reaction and results from is the

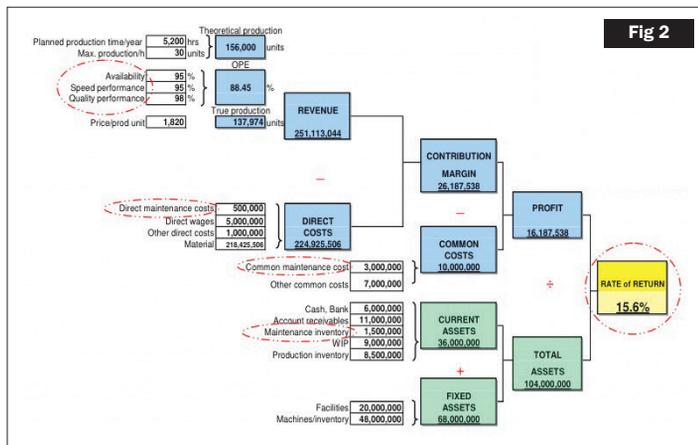
implementation and/ or expansion of a quality condition based maintenance system. The results of which are clearly shown in the examples highlighted in this article. Even during a downturn machines need maintenance, they are still there and need to function reliably."

The saying that only the strongest survive is true in our industries today. As Jackson highlights companies that have carefully invested in these maintenance strategies will be the ones that are ready as and when the upturn occurs, and it will! They will produce at the best quality, on time and at the right price. Those that are not ready will fall by the wayside. It is a battle of the fittest and some will, unfortunately fail, in part because of a lack of foresight to understand their company's maintenance needs.

Instead of lamenting that the world is ending or entertaining similar apocalyptic fears, industry must work hard to earn the trust of the people who work for them and consider the opportunities that may emerge. Investment in people, technology and ideas today will pay dividends tomorrow.

Companies that have entered 2009 with their eyes fully open to both the challenges and opportunities this year may bring will be those who are best placed to prosper when the green shoots of recovery emerge.

For further information please visit: [www.spminstrument.co.uk](http://www.spminstrument.co.uk)



reduction in plant performance and subsequent increase in costs. However, although they realised their error and took evading action it took even longer to make headway in getting back to where they were on day one.

Jackson explains this may not have seemed to be obvious to the financial managers at the time but proved a very effective, but expensive, lesson on maintenance strategies: "The belated level of maintenance investment in order to get back to square one, as can be seen, was huge." He continues: "The level of maintenance activities

results on a 24/7 process and get a grip on the maintenance requirements of your plant. Invasive techniques and over maintenance should be avoided, both of which stretch resources and add unnecessary cost to maintenance budgets. Only this way will you get to maximise the profitability out of your machines over their life cycle."

Another example of how to use maintenance at its best is the following: Figure 4 shows two identical companies manufacture the same products; one works hard the other works smart. The difference is

